

Radiation Temperature Scaling in Hohlräume for Nova and NIF*

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Establishing the practical limit on achievable radiation temperature in high-Z hohlraums is of interest both for ignition targets [1] for proposed high-power lasers such as the National Ignition Facility (NIF), and for x-ray physics experiments [2]. Two related efforts are underway to define the physics issues of high energy density hohlraum targets: 1) experiments on the Nova laser in small scale hohlraums to establish and understand the practical limits on radiation temperature in Nova hohlraums, and 2) design calculations for high-temperature hohlraums for the NIF and related experiments.

Nova experiments are underway to evaluate the effects of the high laser intensity and fill density typical of small vacuum hohlraums on radiation physics and parametric instabilities. Modeling and analysis of these experiments tests our understanding of physics effects that may determine the practical limits for hohlraum temperatures with NIF. Modeling results for the Nova experiments will be presented, and issues and scalings relevant to NIF hohlraum design calculations will be discussed.

1. S. M. Haan, et al., Phys. Plasmas **2**, 2480 (1995).
2. S. B. Libby, Energy and Technology Review, UCRL-52000-94-12, 23 (1994).

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